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Wei et al.

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(54) **INK SUPPLY SYSTEM AND MULTIFUNCTIONAL PRINTER**

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Related U.S. Application Data

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B41J 2/175 (2006.01)
B41J 29/02 (2006.01)

(52) **U.S. Cl.**
CPC ***B41J 2/17596*** (2013.01); ***B41J 2/175*** (2013.01); ***B41J 2/1752*** (2013.01); ***B41J 29/02*** (2013.01); ***B41J 29/13*** (2013.01)

(58) **Field of Classification Search**
CPC B41J 2/17596; B41J 2/175; B41J 29/13; B41J 29/02; B41J 2/1752
USPC 347/89, 86, 85, 108
See application file for complete search history.

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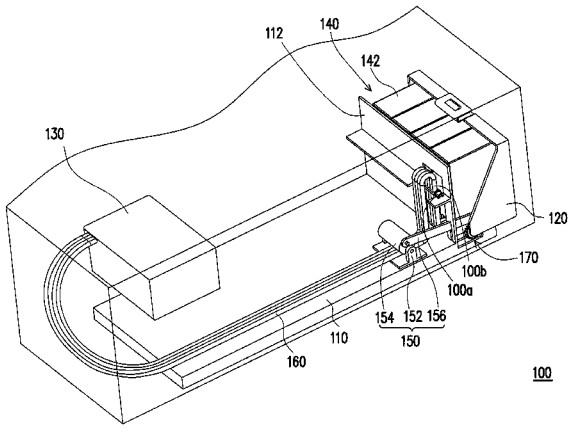
(57) **ABSTRACT**

An ink supply system including a cover, an ink delivery module, delivery pipes and a shut-off valve module, and a media recording device including a body and a print head disposed therein are provided. The cover is pivoted to the body, and the ink delivery module is disposed therein and next to the cover. The shut-off valve module includes a base disposed in the body, an eccentric wheel pivoted to the base, and a linkage connected between the eccentric wheel and the cover. The delivery pipes are connected between the print head and the ink delivery module and they pass between the base and the eccentric wheel. The cover is opened or closed relative to the body and it drives the linkage to drive the eccentric wheel to rotate relative to the base so as to press against or release the delivery pipes.

19 Claims, 14 Drawing Sheets



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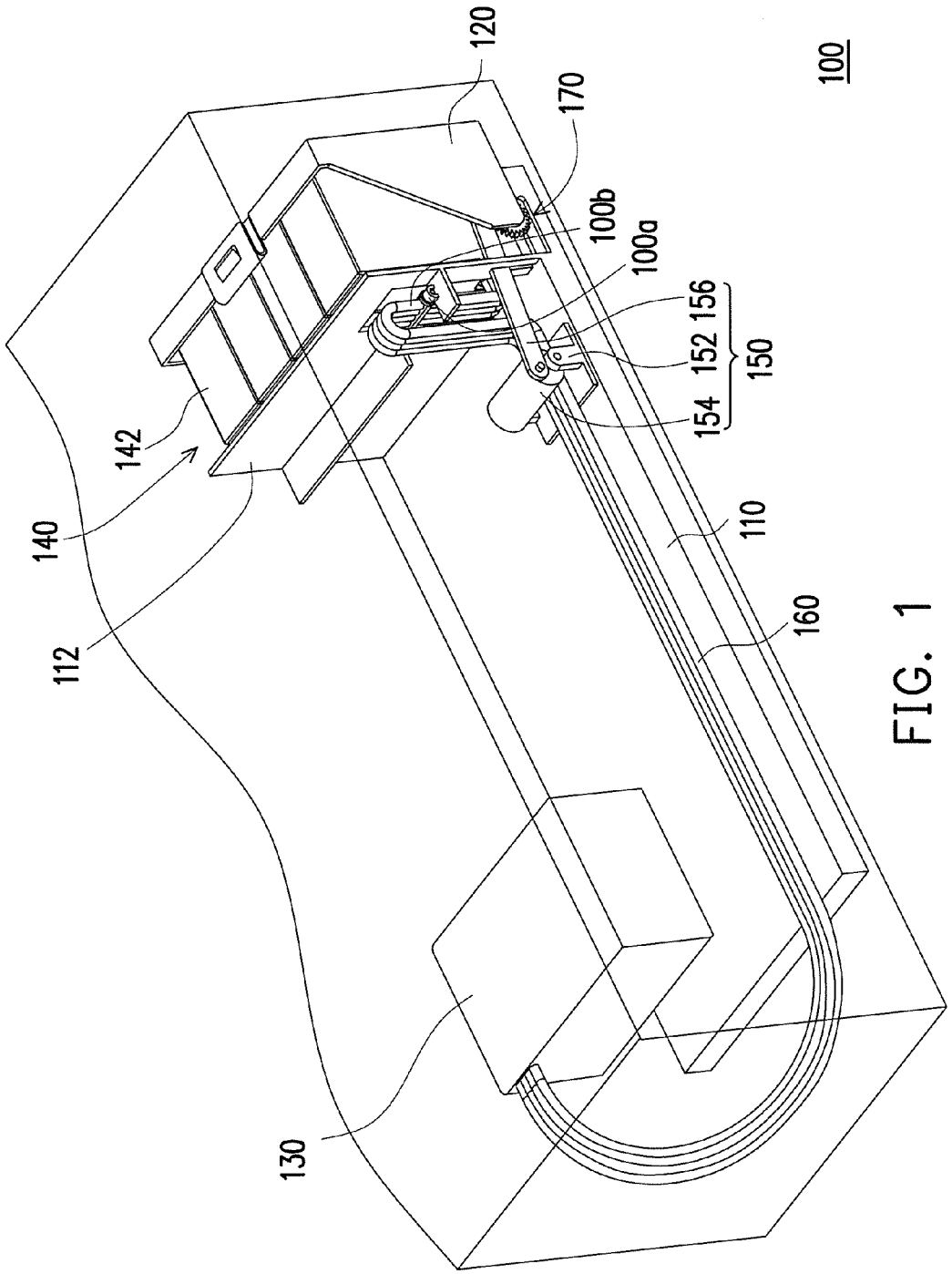


FIG. 1

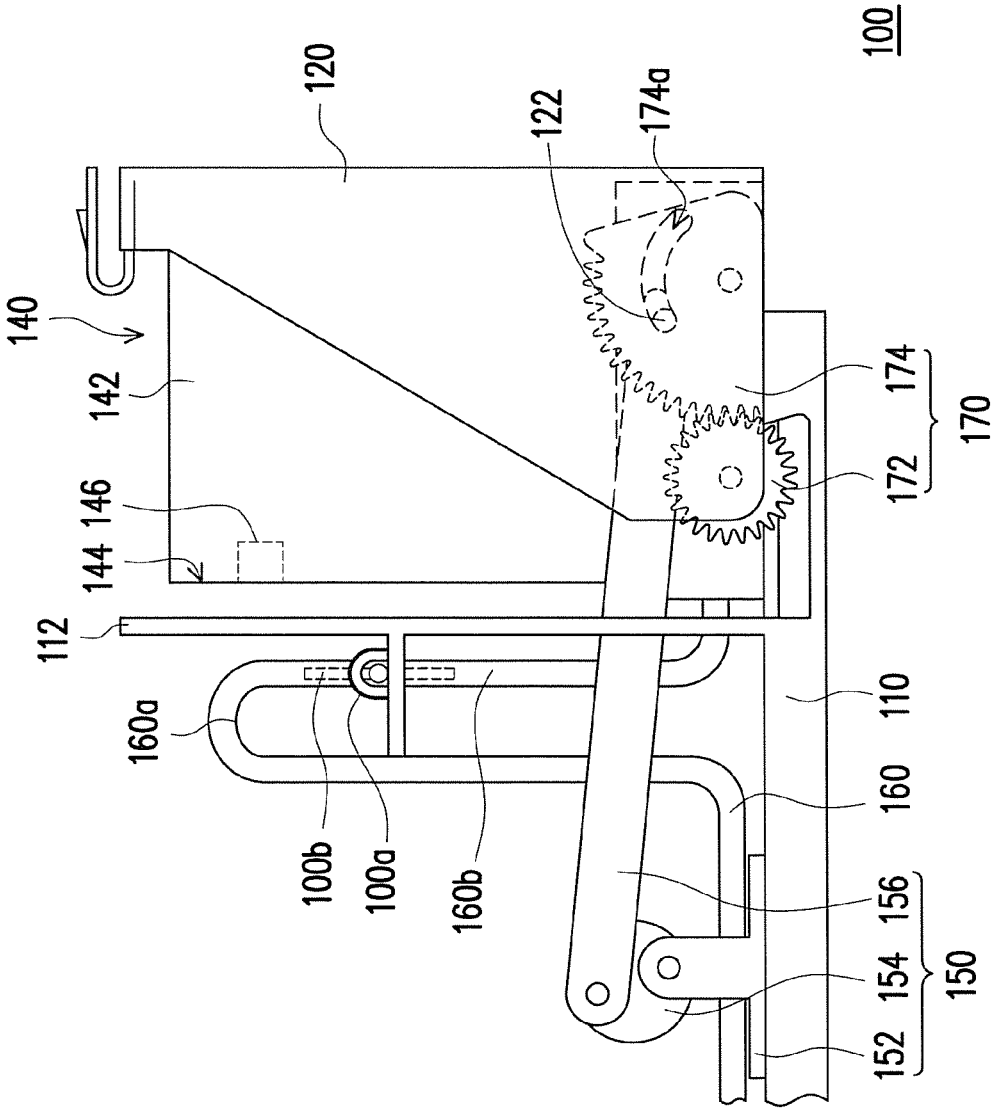

100
120
122
174a
140
142
146
144
112
174
172
170
110
160a
160
100b
100a
160b
156
154
150
152

FIG. 2

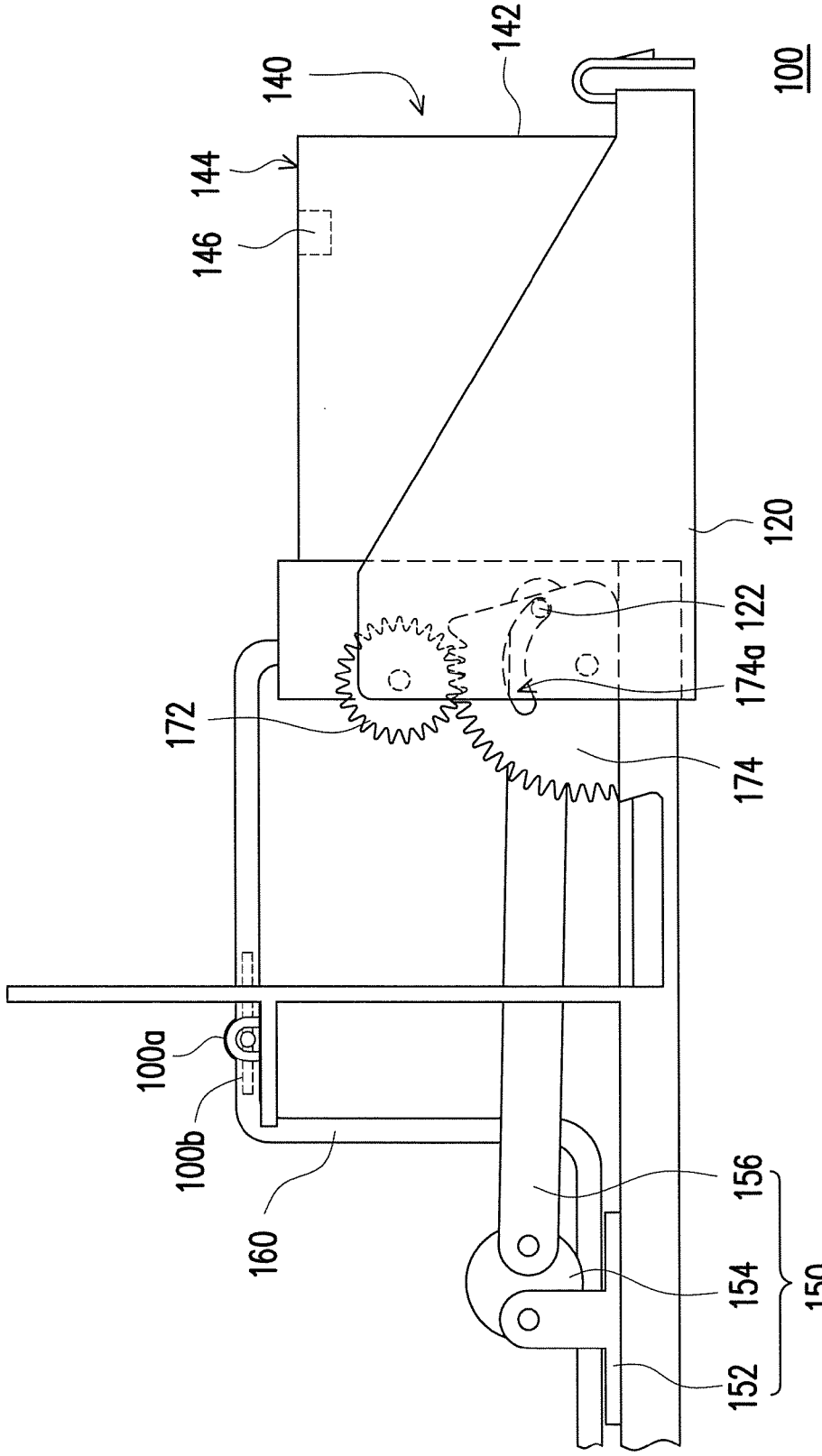

140
142
100
144
146
120
122
174a
172
174
100a
100b
160
156
154
150
152

FIG. 3

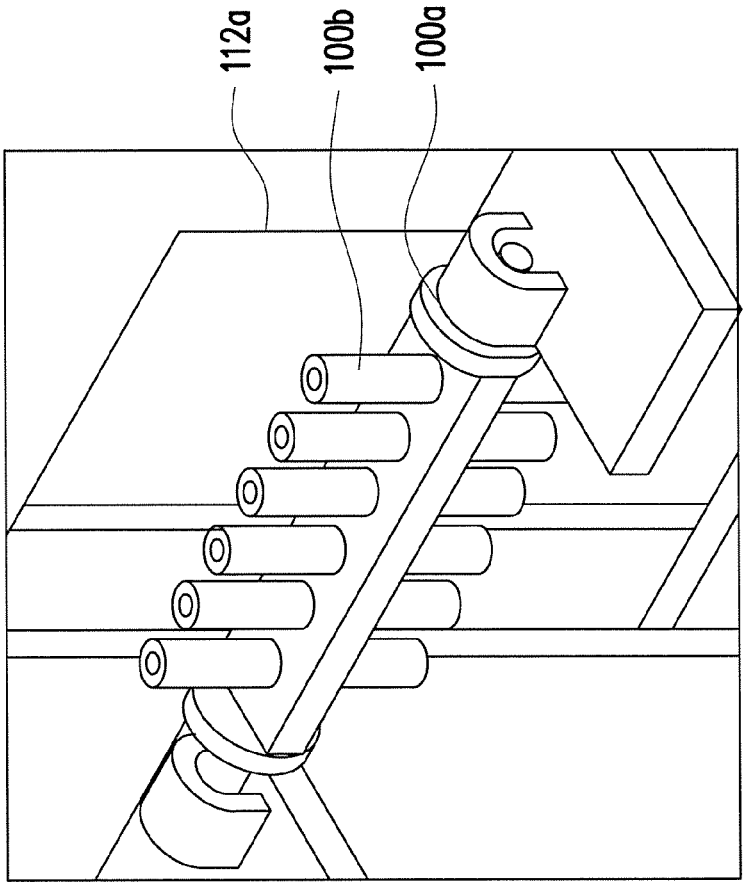


FIG. 4

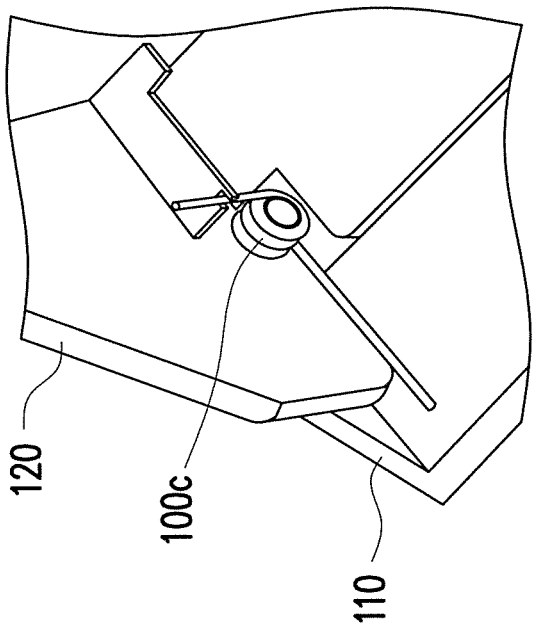


FIG. 5

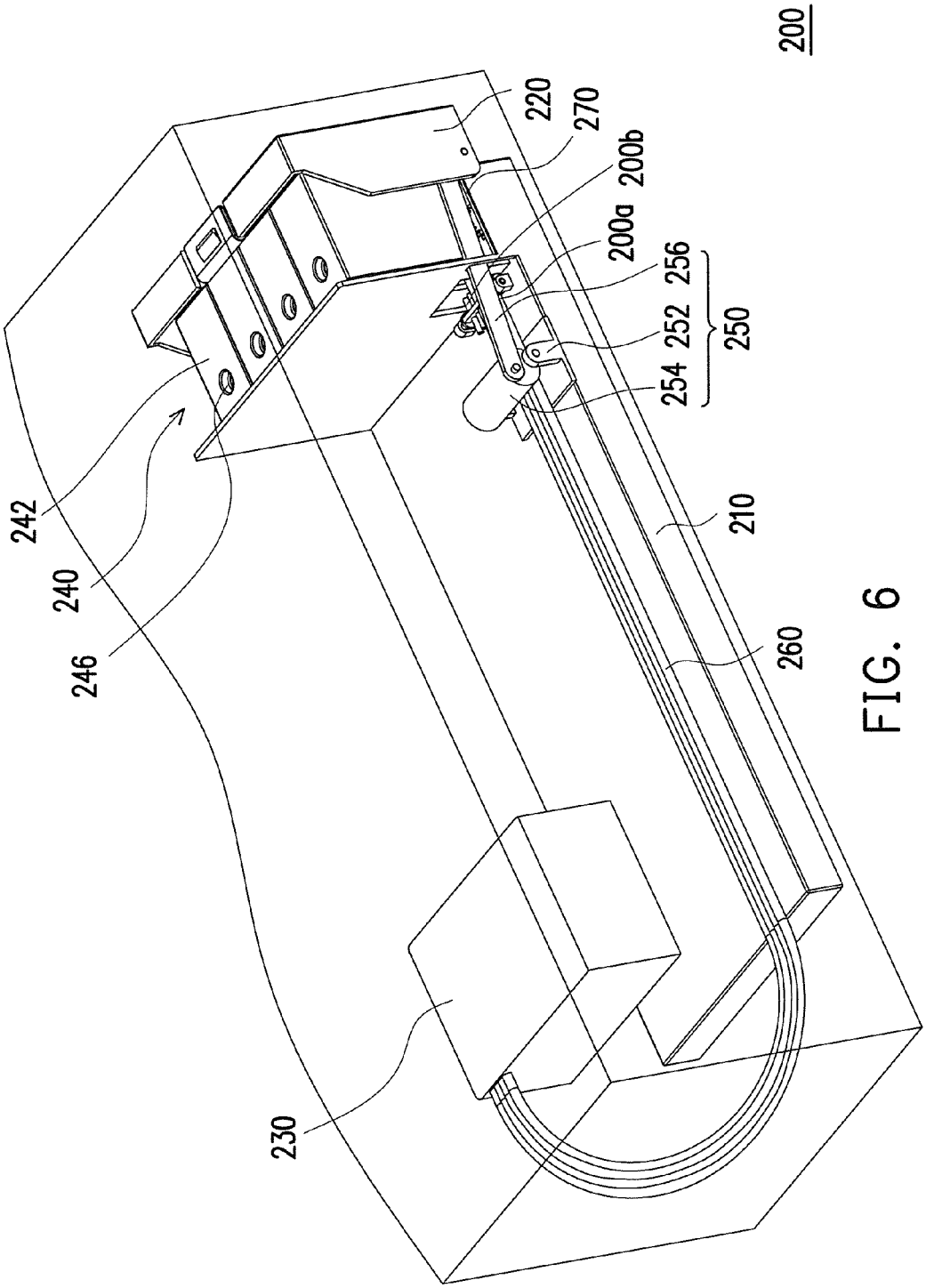


FIG. 6

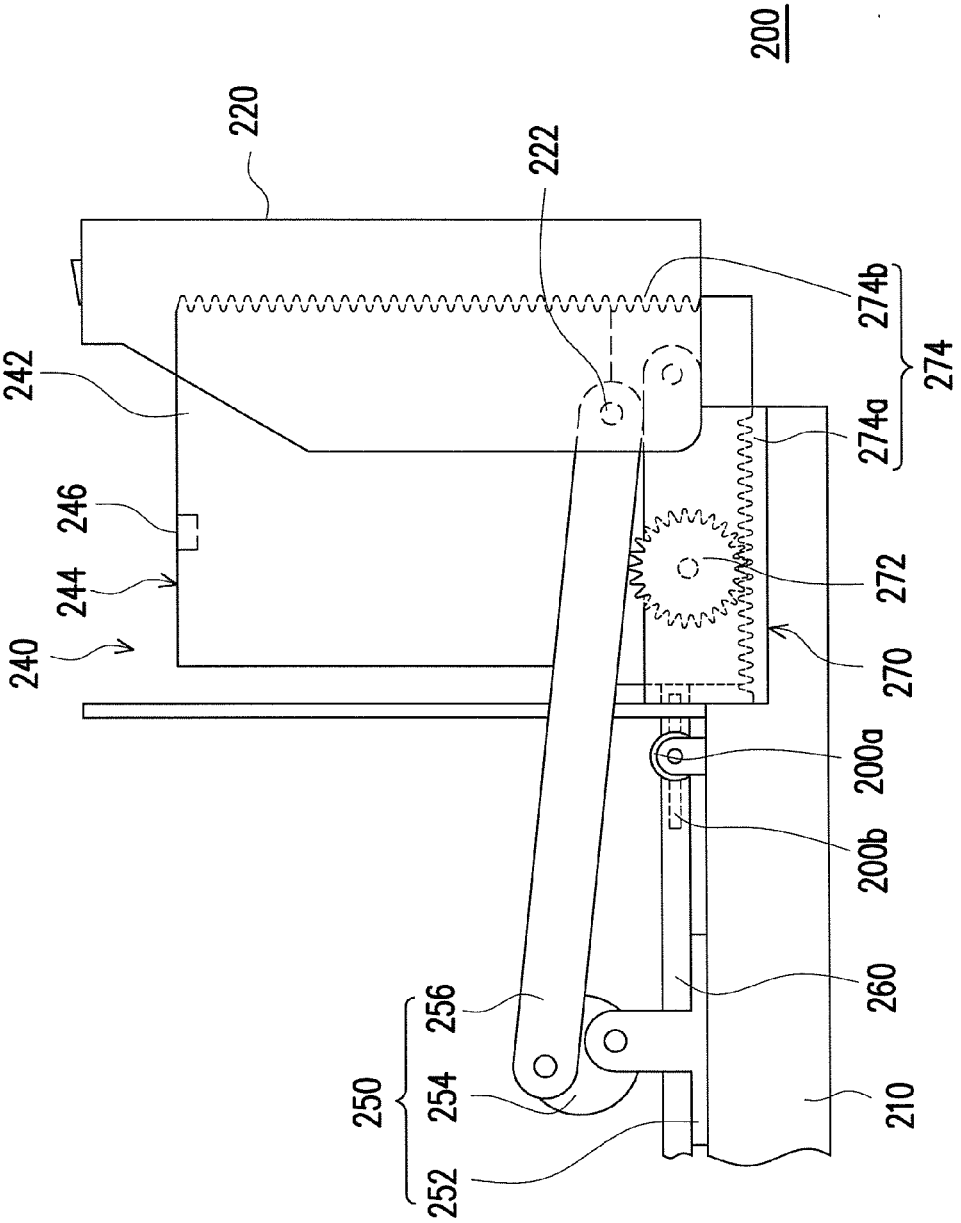
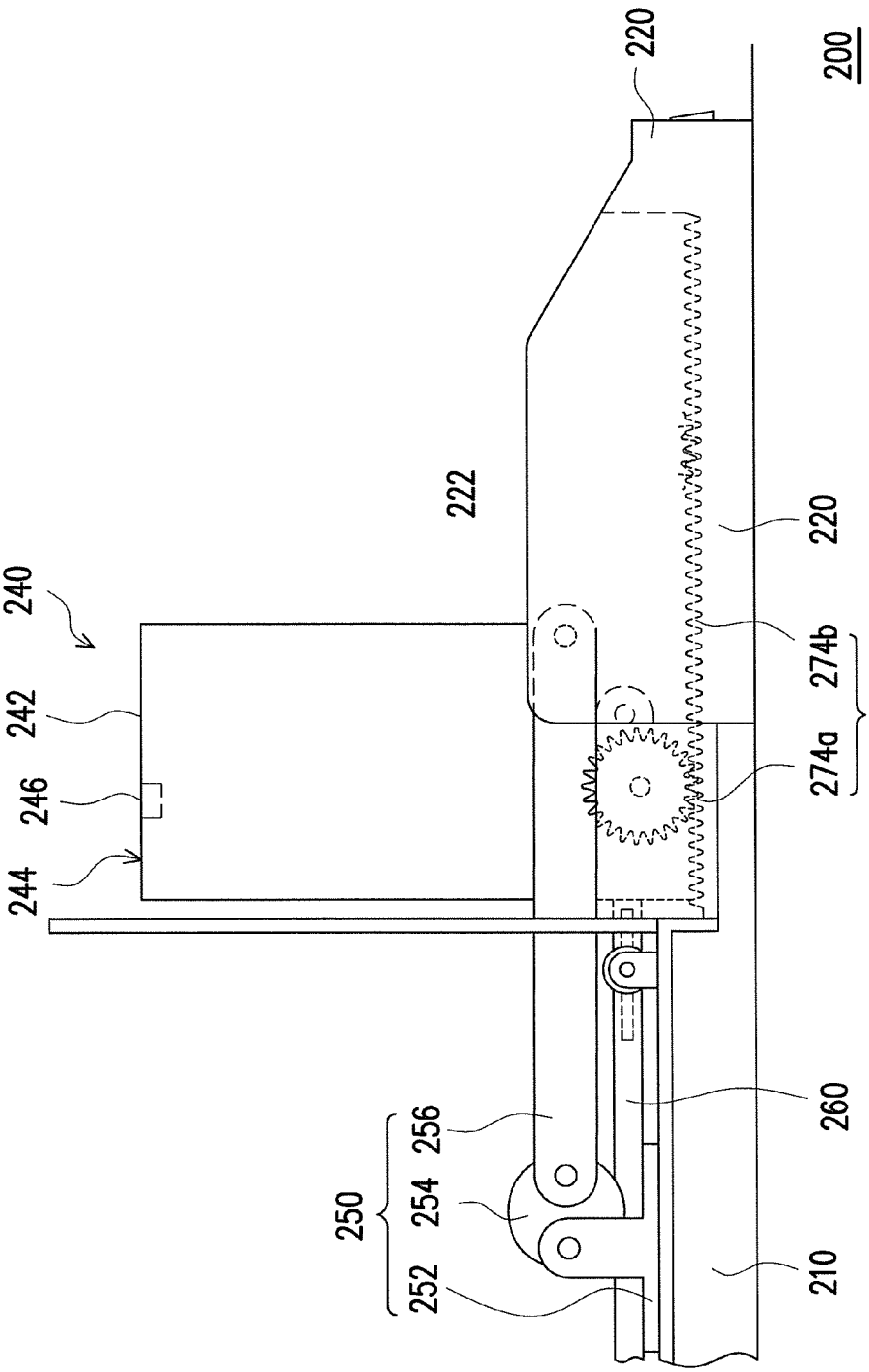

200
220
222
274b
274
242
274a
246
244
272
240
270
200a
200b
260
256
250
254
210
252

FIG. 7


200
220
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220
240
242
246
244
274b
274
274a
260
250
256
254
252
210

FIG. 8

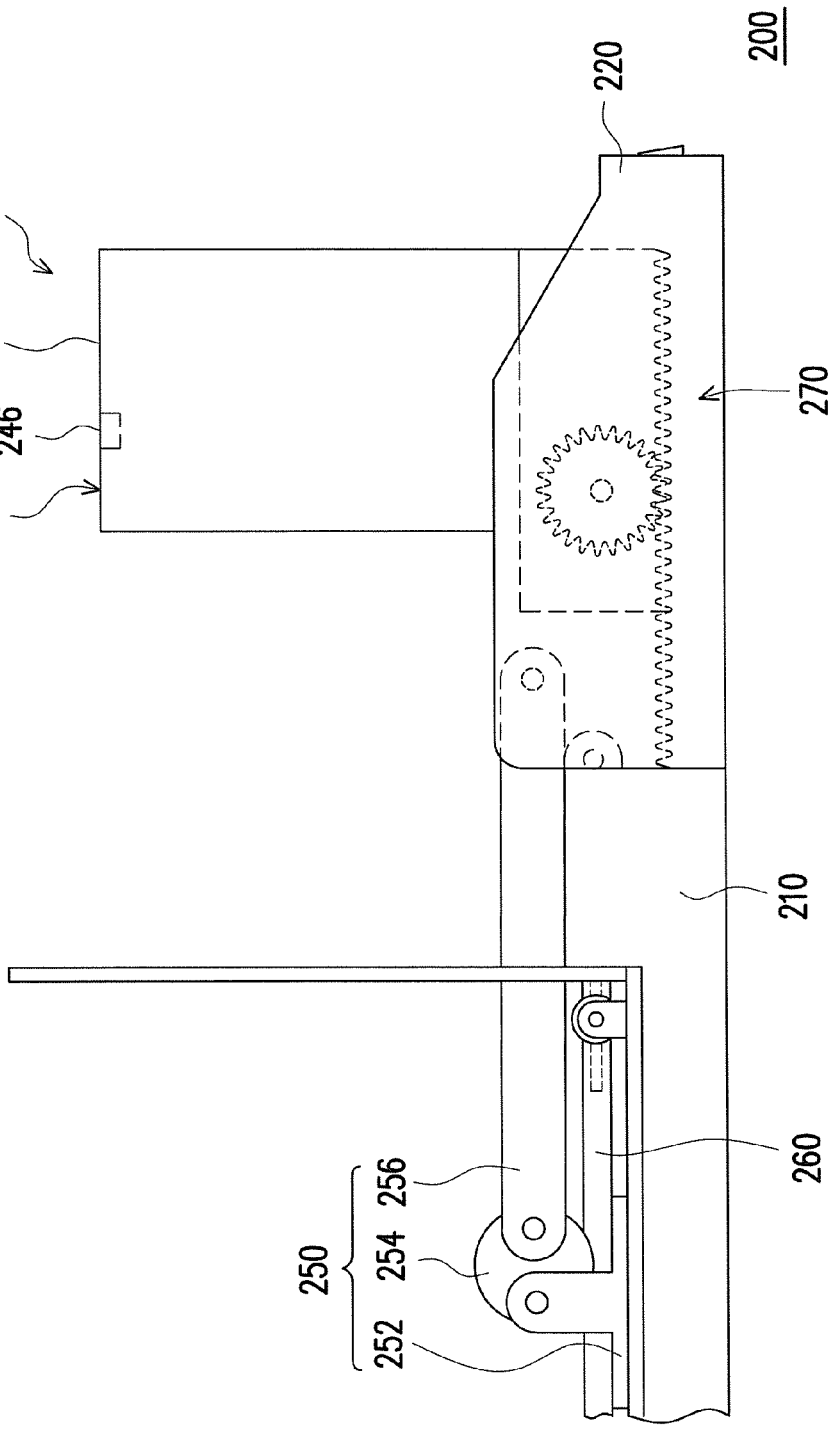

FIG. 9

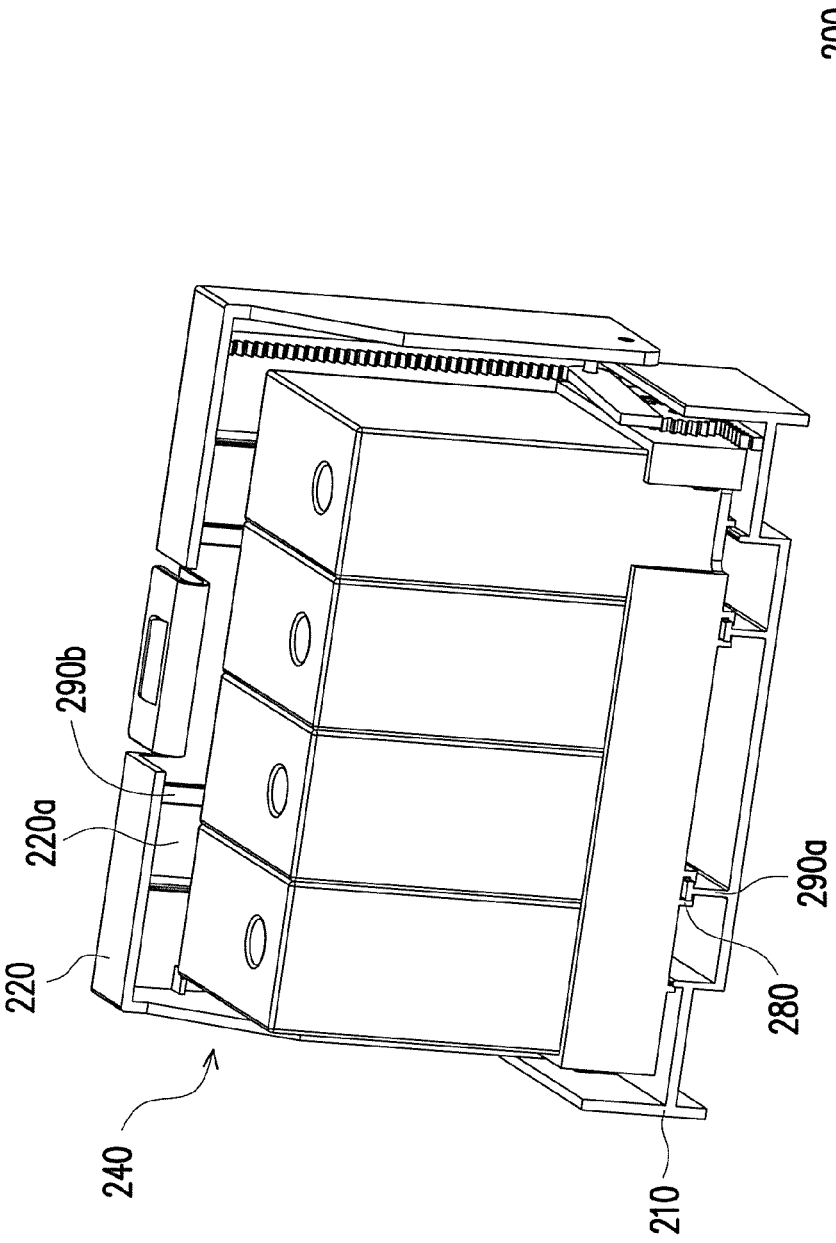

FIG. 10A

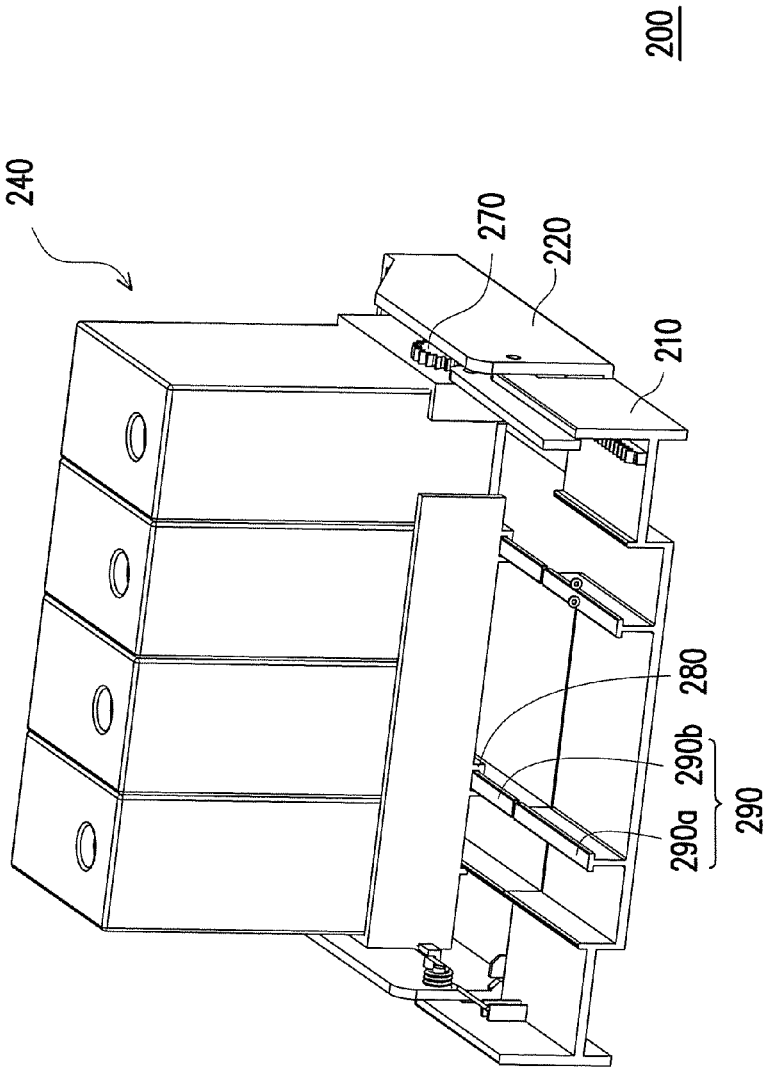

FIG. 10B

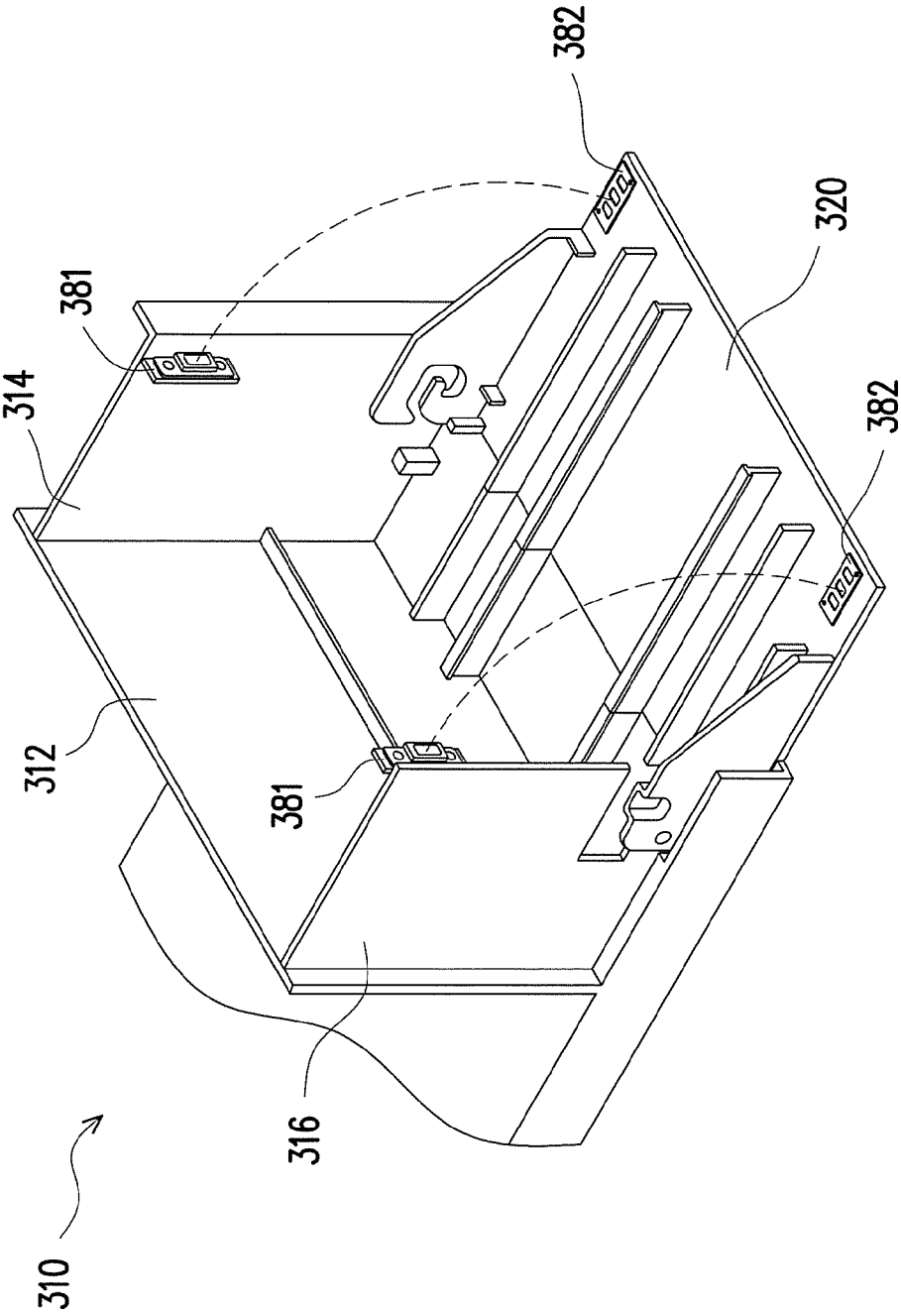

FIG. 11

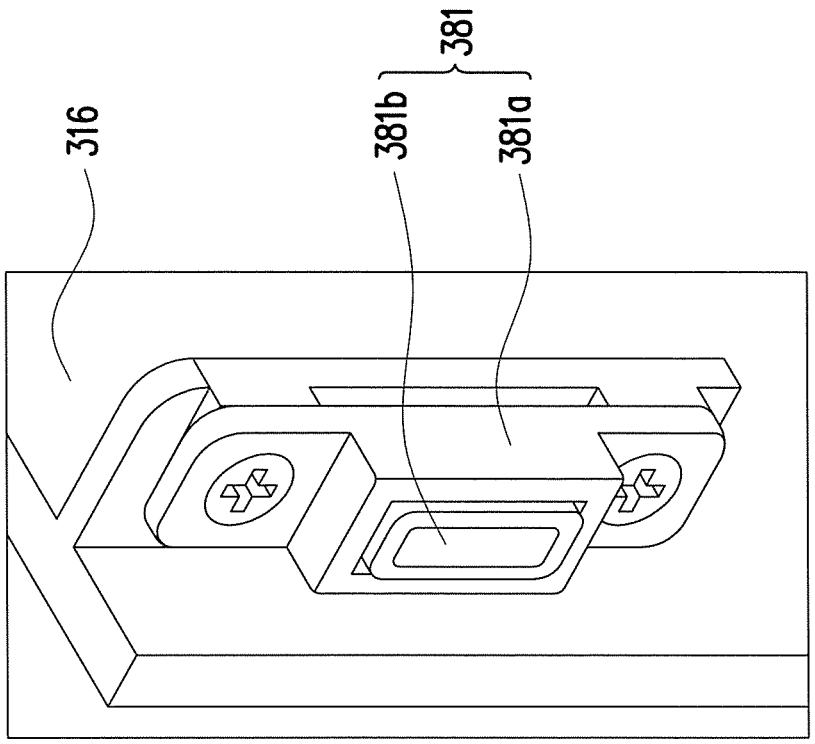

FIG. 12

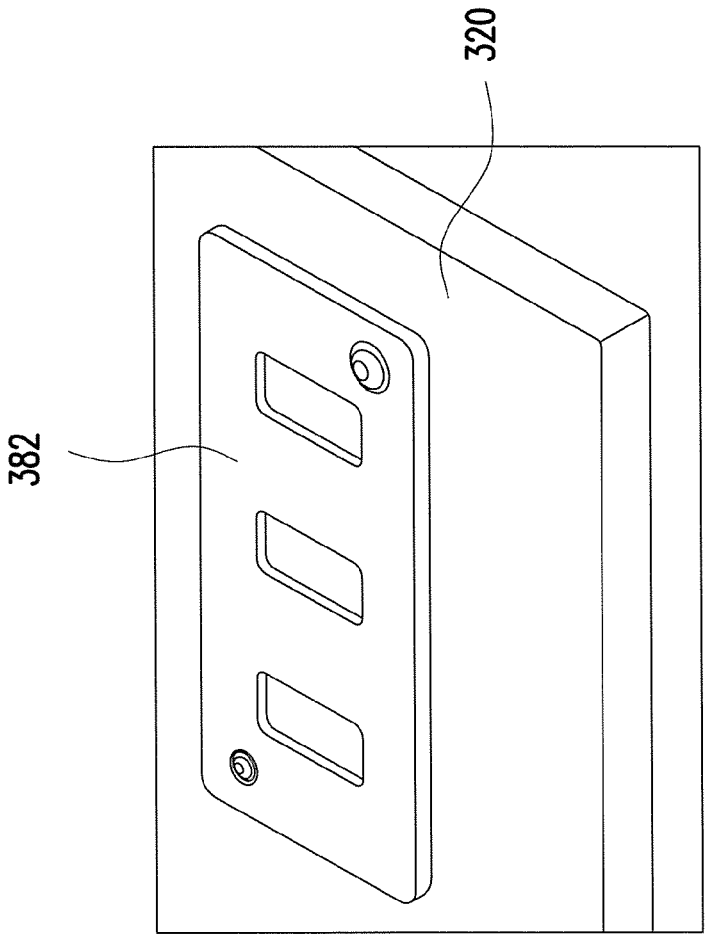

FIG. 13

INK SUPPLY SYSTEM AND MULTIFUNCTIONAL PRINTER

CROSS-REFERENCE TO RELATED APPLICATION

This application is a continuation-in-part application of and claims the priority benefit of U.S. application Ser. No. 13/747,439, filed on Jan. 22, 2013, now pending. The U.S. application Ser. No. 13/747,439 claims the priority benefit of Taiwan application serial no. 101134810, filed on Sep. 21, 2012. This application also claims the priority benefit of Taiwan application serial no. 101148797 filed on Dec. 20, 2012. The entirety of each of the above-mentioned patent applications is hereby incorporated by reference herein and made a part of this specification.

BACKGROUND

1. Technical Field

The invention relates generally to an ink supply system and a media recording device. More particularly, the invention relates to an ink supply system and a media recording device having a shut-off valve module.

2. Related Art

With the advent of the information society, automated equipments such as the scanner, photocopier, or the printer are being installed in the office, and users may perform secretarial processing operations using these automated office equipments. It should be noted that when the various types of automated office equipments above are simultaneously disposed in the office, a lot of space is consumed. As a result, a multi-function peripheral (MFP) integrating functions such as copying, printing, and scanning is developed to solve the above issue.

As an example, after a multi-function peripheral having an inkjet printing function has been used for a period of time, an executed printing operation may need to be paused in order to replace an ink cartridge because the ink in the cartridge has been depleted. Additionally, since the ink cartridge cannot be reused, there is a resource waste issue.

Moreover, another type of currently available ink supply system configures an ink container outside of the inkjet printer. By using the delivery pipes connected to the ink container and the ink cartridges disposed inside the inkjet printer, ink is guided from the ink container into the ink cartridges by utilizing a vacuum ink guiding principle. Although this method can be environmentally friendly, space outside of the inkjet printer is occupied because the ink container is disposed outside of the inkjet printer. Furthermore, when users add ink to the ink cartridges, ink may leak from the print head because of the connection of the delivery pipes.

SUMMARY

The invention provides an ink supply system and a media recording device, in which the ink delivery module is exposed outside when the cover is opened relative to the body, for ease of the user to add ink, and to prevent ink leakage by using the shut-off valve module.

The invention provides an ink supply system adapted for a media recording device. The media recording device includes a body and a print head disposed in the body. The ink supply system includes a cover, an ink delivery module, a plurality of delivery pipes, and a drive module. The cover is pivoted to the body, and the cover is adapted to open relative to the body so as to expose a plurality of elements disposed in the body. The print head is disposed in the body, the ink delivery module is disposed in the body and next to the cover, and the ink delivery module has a plurality of color ink cartridges. The delivery pipes are connected between the print head and the ink delivery module. The drive module includes a first drive element and a second drive element. The first drive element is disposed on the ink delivery module, the second drive element is disposed on at least one of the body and the cover, and the second drive element is linked to the first drive element.

The invention provides a media recording device, including a body, a cover, a print head, an ink delivery module, a plurality of delivery pipes, and a shut-off valve module. The cover is pivoted to the body, and the cover is adapted to open relative to the body so as to expose a plurality of elements disposed in the body. The print head is disposed in the body, the ink delivery module is disposed in the body and next to the cover, and the ink delivery module has a plurality of color ink cartridges. The shut-off valve module includes a base, an eccentric wheel, and a linkage. The base is disposed in the body, the eccentric wheel is pivoted to the base, and the linkage is connected between the eccentric wheel and the cover. The delivery pipes are connected between the print head and the ink delivery module, and the delivery pipes pass between the base and the eccentric wheel. The cover rotates relative to the body and drives the linkage to drive the eccentric wheel to rotate relative to the base, so the eccentric wheel presses against or releases the delivery pipes.

According to an embodiment of the invention, the ink supply system further includes a shut-off valve module disposed between the print head and the ink delivery module. The shut-off valve module includes a base, an eccentric wheel, and a linkage. The base is disposed in the body, and the eccentric wheel is pivoted to the base. The linkage is connected between the eccentric wheel and the cover, and the delivery pipes pass between the base and the eccentric wheel. The cover rotates relative to the body and drives the linkage to drive the eccentric wheel to rotate relative to the base, so the eccentric wheel presses against or releases the delivery pipes.

According to an embodiment of the invention, the first drive element and the second drive element are gear wheels. The first drive element is pivoted to the cover, and the second drive element is disposed on the body. The first drive element rotates along the second drive element so the cover rotates relative to the body.

According to an embodiment of the invention, the second drive element has a guide slot, the cover has a camshaft, and the camshaft is inserted in the guide slot and connected to an end of the linkage, so the cover and the linkage are guided and restricted by the guide slot.

According to an embodiment of the invention, each of the ink cartridges of the ink delivery module has a cartridge body and an ink injection hole located on a side wall of the cartridge body. The cartridge body is disposed on the cover to rotate relative to the body along with the cover, so the ink injection hole faces the print head or is exposed outside of the body.

According to an embodiment of the invention, the first drive element is a gear wheel pivoted to the ink delivery module, and the second drive element is a gear rack. A first section of the gear rack is disposed on the body, a second section of the gear rack is disposed on the cover. When the cover is closed relative to the body, the first section and the second section are separated from each other. When the cover is opened relative to the body, the first section is connected to the second section, and the ink delivery module is slid out of the body by using the first drive element to rotate along the first section and the second section.

According to an embodiment of the invention, the media recording device further includes a first rail and a second rail. The first rail is disposed on a bottom surface of the ink delivery module, and the second rail is correspondingly coupled to the first rail. A third section of the second rail is disposed on the body, and a fourth section of the second rail is disposed on the cover. When the cover is closed relative to the body, the third section and the fourth section are separated from each other. When the cover is opened relative to the body, the third section is connected to the fourth section. Moreover, the ink delivery module is slid out of the body by using the first rail to slide along the third section and the fourth section.

According to an embodiment of the invention, each of the ink cartridges of the ink delivery module has a cartridge body and an ink injection hole located on a top wall of the cartridge body, and the ink injection slides in or slides out of the body along with the cartridge body.

According to an embodiment of the invention, the media recording device further includes a pivot and a plurality of pipes. The pivot is pivoted to the body, and the pipes are inserted on the pivot. The delivery pipes are joined to the corresponding pipes so the delivery pipes and the pipes rotate relative to a wall. Each of the delivery pipes includes a first part and a second part, and the first part and the second part of a same delivery pipe are connected to two opposite ends of a same pipe.

According to an embodiment of the invention, the media recording device further includes a damping element disposed on a side of the ink delivery module not configured with the first drive element, and the damping element is leaned between the body and the cover.

In summary, the ink supply system and the media recording device according to the embodiments of the invention have the shut-off valve module, and by using the linkage connected between the cover and the eccentric wheel in the shut-off valve module to drive the eccentric wheel to press against the delivery tubes when the cover is opened, ink is prevented from flowing to the print head and affecting the printing procedure of the media recording device when the user adds ink to the ink delivery module.

Several exemplary embodiments accompanied with figures are described in detail below to further describe the disclosure in details.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings constituting a part of this specification are incorporated herein to provide a further understanding of the disclosure. Here, the drawings illustrate embodiments of the disclosure and, together with the description, serve to explain the principles of the disclosure.

FIG. **1** is a perspective view of a media recording device according to an embodiment of the invention.

FIG. **2** is a partial side view of the media recording device depicted in FIG. **1**.

FIG. **3** is a partial side view of the media recording device depicted in FIG. **1** with the cover open relative to the body.

FIG. **4** is a perspective view of the pivot and the pipes not joined to the delivery pipes depicted in FIG. **2**.

FIG. **5** illustrates the damping element of the media recording device depicted in FIG. **1**.

FIG. **6** is a schematic view of a media recording device according to another embodiment of the invention.

FIG. **7** is a partial side view of the media recording device depicted in FIG. **6**.

FIG. **8** is a partial side view of the cover depicted in FIG. **6** being opened relative to the body.

FIG. **9** is a partial side view of the ink delivery module of the media recording device depicted in FIG. **6** moving out of the body.

FIG. **10**A is a partial perspective view of the media recording device depicted in FIG. **6** from another viewing angle.

FIG. **10**B is a partial perspective view of the cover depicted in FIG. **10**A being opened relative to the body.

FIG. **11** is a partial schematic view of a media recording device according to another embodiment of the invention.

FIG. **12** and FIG. **13** are respective partial enlarged views of FIG. **11**.

DESCRIPTION OF EMBODIMENTS

FIG. **1** is a perspective view of a media recording device according to an embodiment of the invention. With reference to FIG. **1**, a media recording device **100** may be a multi-function peripheral (MFP) having scanning, copying, and printing functions, including a body **110**, a cover **120**, a print head **130**, an ink delivery module **140**, a shut-off valve module **150**, and a plurality of delivery pipes **160**. The cover **120**, the ink delivery module **140**, the shut-off valve module **150**, and the delivery pipes **160** form an ink supply system IS of the media recording device **100**. The cover **120** is pivoted to the body, and the cover **120** is adapted to open relative to the body **110** so as to expose a plurality of elements (not drawn) disposed in the body **110**. The print head **130** is disposed in the body **110**, and the ink delivery module **140** has a plurality of color ink cartridges (not drawn). The ink delivery module **140** is disposed in the body **110** next to the cover **120**. The delivery pipes **160** are connected between the print head **130** and the ink delivery module **140**, so that the ink in the ink delivery module **140** can flow to the print head **130** through the corresponding delivery pipes **160**. The shut-off valve module **150** is disposed in the body **110**, and located between the print head **130** and the ink delivery module **140**.

FIG. **2** is a partial side view of the media recording device depicted in FIG. **1**. FIG. **3** is a partial side view of the media recording device depicted in FIG. **1** with the cover open relative to the body. With reference to FIGS. **2** and **3**, in specifics, the shut-off valve module **150** includes a base **152**, an eccentric wheel **154**, and a linkage **156**. The base **152** is disposed in the body **110**, the eccentric wheel **154** is pivoted to the base **152**, and the linkage **156** is connected between the eccentric wheel **154** and the cover **120**. The delivery pipes **160** pass between the base **152** and the eccentric wheel **154**. When the cover **120** is closed relative to the body **119**, which is the state of the two relative positions illustrated in FIG. **2**, a distance is provided between the eccentric wheel **154** and the base **152** for the delivery tubes **160** to pass, and so the ink can flow in the delivery tubes **160**.

When ink needs to be added, the cover **120** can be opened relative to the body **110**, such that the state of the two relative positions illustrated in FIG. **3** is when the cover **120** is opened relative to the body **110**. The cover **120** drives the linkage **156** to drive the eccentric wheel **154** to rotate relative to the base **152**. At this time, the delivery pipes **160** located between the eccentric wheel **154** and the base **152** is pressed, so as to prevent the ink flowing to the print head **130** through the delivery pipes **160** when ink is being added, and affecting the printing procedure of the multi-function peripheral **100**. When the relative positions of the cover **120** and the body **110** are returned to the state illustrated in FIG. **2**, the linkage **156**

drives the eccentric wheel **154** to release the delivery pipes **160**. At this time, the ink can again flow in the delivery pipes **160**.

With reference to FIGS. **2** and **3**, the ink supply system IS further includes a drive module **170** located on a side of the ink delivery module **140**. The drive module **170** includes a first drive element **172** and a second drive element **174**. The first drive element **172** is pivoted to the cover **120**, and the second drive element **174** is disposed on the body **110** and linked to the first drive element **172**. Moreover, each of the ink cartridges of the ink delivery module **140** has a cartridge body **142**, and the cartridge body **142** has a side wall **144** and an ink injection hole **146** (only one of the cartridge bodies **142** is illustrated in the side views of FIGS. **2** and **3**). When the cover **120** is closed relative to the body **110**, the ink injection hole **146** is located on the side wall **144** of the cartridge body **142** facing the print head **130** (the print head **130** is shown in FIG. **1**).

With reference to FIGS. **2** and **3**, in the present embodiment, the first drive element **172** and the second drive element **174** are both gear wheels, and the first drive element **172** is engaged to the second drive element **174**. In specifics, the first drive element **172** is a gear wheel pivoted on the cover **120**, and the second drive element **174** is a partial gear structure integrally formed with the body **110**. Moreover, the second drive unit **174** has a guide slot **174***a*, the cover **120** has a camshaft **122**. The camshaft **122** is inserted in the guide slot **174***a* and connected to an end of the linkage **156**, so that the cover **120** and the linkage **156** are simultaneously guided and restricted by the guide slot **174***a*.

When the cover **120** is opened relative to the body **110**, the ink delivery module **140** exhibits the state illustrated in FIG. **3** with the rotation, and at this time, the injection hole **146** on the side wall **144** is exposed for the user to inject ink. It should be noted that, as the first drive element **172** engages with the second drive element **174**, a buffering and stabilizing effect can be provided for the ink delivery module **140** during the rotation. As a result, the ink delivery module **140** gradually falls toward the cover **120**, and leaking of the ink inside the cartridge body **142** is prevented. Moreover, due to the guiding and restricting of the guide slot **174***a* of the second drive element **174** and the camshaft **122**, the rotation of the ink delivery module **140** relative to the body **110** is stable. It should be noted that, when the cover **120** is opened relative to the body **110**, the ink delivery module **140** may not be driven. After the cover **120** is opened, the user can also rotate the ink delivery module **140** to the state shown in FIG. **3** by a manual or an automatic method.

With reference to FIGS. **2** and **3**, the ink supply system IS further includes a pivot **100***a* and a plurality of pipes **100***b* (only one of the pipes **100***b* is illustrated in the side views of FIGS. **2** and **3**). The pivot **100***a* is pivoted on a wall **112** of the body **110**, the pipes **100***b* are inserted on the pivot **100***a*, and each of the delivery pipes **160** is joined to the corresponding pipes **100***b*, such that the delivery pipes **160** and the pipes **100***b* rotate relative to the wall **112**. In the present embodiment, the delivery pipes **160** include a first part **160***a* and a second part **160***b*. The first part **160***a* and the second part **160***b* of a same delivery pipe **160** are connected to two opposite ends of a same pipe **100***b*. It should noted that, since one end of the delivery pipes **160** is connected to the ink delivery module **140**, when the ink delivery module **140** rotates, the ink delivery module **140** drives the delivery pipes **160**, and then the delivery pipes **160** drive the pipes **100***b* to rotate relative to the pivot **100***a*.

FIG. **4** is a perspective view of the pivot and the pipes not joined with the delivery pipes depicted in FIG. **2**. As shown in FIG. **4**, the pipes **100***b* are arranged side by side and inserted on the pivot **100***a*, and each of the pipes **100***b* is hollow. After the delivery pipes **160** are joined to the pipes **100***b*, ink can flow therein. Moreover, as shown in FIG. **4**, the wall **112** has an opening **112***a* which can provide a rotating space for the pipes **100***b*.

FIG. **5** illustrates the damping element of the media recording device depicted in FIG. **1**. In the present embodiment, the media recording device **100** further includes a damping element **100***c*, such as a torsion spring. The damping element **100***c* can provide a buffering effect when the cover **120** is opened or closed. In the present embodiment, the damping element **100***c* is disposed on a side of the ink delivery module **140** not configured with the first drive element **172**, and the damping element **100***c* is leaned between the body **110** and the cover **120**.

FIG. **6** is a schematic view of a media recording device according to another embodiment of the invention. A media recording device **200** includes a body **210**, a cover **220**, a print head **230**, an ink delivery module **240**, a shut-off valve module **250**, a plurality of delivery pipes **260**, and a drive module **270**. The cover **220**, the ink delivery module **240**, the shut-off valve module **250**, the delivery pipes **260**, and the drive module **270** form an ink supply system IS**2**. The cover **220** is pivoted to the body **210**, and the cover **220** is adapted to open relative to the body **210**. The print head **230** is disposed in the body **210**, and the ink delivery module **240** is disposed in the body **210** next to the cover **220**. The delivery pipes **260** are connected between the print head **230** and the ink delivery module **240**. The shut-off valve module **250** is disposed in the body **210**, and located between the print head **230** and the ink delivery module **240**. The drive module **270** is located on a side of the ink delivery module **240**.

The present embodiment is substantially similar to the embodiment illustrated in FIG. **1**, with the differences therebetween in the components and operation of the drive module **270**, and the movement of the ink delivery module **240** after the cover **220** is opened relative to the body **210**. Similar technical contents of the present embodiment and the embodiment illustrated in FIG. **1** are omitted hereafter. For a detailed description of the omitted section, reference can be found in the previous embodiments, and therefore no further elaboration is contained herein.

FIG. **7** is a partial side view of the media recording device depicted in FIG. **6**. With reference to FIG. **7**, in the shut-off valve module **250**, a linkage **256** is connected between an eccentric wheel **254** and the cover **220**, and the delivery pipes **260** pass between the base **252** and the eccentric wheel **254**. When the cover **220** rotates relative to the body **210** and is opened, the cover **220** drives the linkage **256** to drive the eccentric wheel **254** to rotate relative to the base **252**. The delivery pipes **260** located between the eccentric wheel **254** and the base **252** are pressed, so as to prevent the ink from flowing.

As shown in FIG. **7**, in the present embodiment, a first drive element **272** is a gear wheel pivoted to the ink delivery module **240**, and a second drive element **274** is a gear rack. A first section **274***a* of the second drive element **274** is disposed on the body **210**, and a second section **274***b* is disposed on the cover **220**. As shown in FIG. **7**, when the cover **220** is in a closed state relative to the cover **220**, the first section **274***a* and the second section **274***b* are separated from each other. In the present embodiment, each of the ink cartridges of the ink delivery module **240** has a cartridge body **242**, and the cartridge body **242** has a top wall **244** and an ink injection hole **246**. The ink injection hole **246** is located on the top wall **244**. In the present embodiment, the ink supply system IS**2** further

includes a pivot **200***a* and a plurality of pipes **200***b* having similar functions and appearance as the embodiment illustrated in FIG. **1**, although the location of the pivot **200***a* is different from the embodiment of FIG. **1**. As shown in FIG. **7**, the pivot **200***a* is pivoted to the base of the body **210**, and the pipes **200***b* are inserted on the pivot **200***a*.

FIG. **8** is a partial side view of the cover depicted in FIG. **6** being opened relative to the body. As shown in FIG. **8**, when the user realizes that ink needs to be added to the media recording device **200**, the cover **220** can be opened relative to the body **210** in preparation for the ink addition. At this time, in the second drive element **274**, the first section **274***a* located on the body **210** is connected to the second section **274***b* located on the cover **220** to form an entire connected gear rack. In the present embodiment, the linkage **256** is connected to a camshaft **222** on the cover **220**. Therefore, when the cover **220** is opened relative to the body **210**, the cover **220** drives the linkage **256** to drive the eccentric wheel **254** to rotate relative to the base **252**, so as to press against the delivery pipes **260**.

It should be noted that, the ink delivery module **240** in the present embodiment does not rotate along with the cover **220**. The user can use the first drive element **272** to slide the ink delivery module **240** out of the body **210** along the connected second drive element **274** by a manual or an automatic method. For the automatic method, the ink supply system IS**2** may further include a power source (not drawn) disposed in the body **210**, such as a motor or an electromagnetic valve. When the cover **220** is opened relative to the body **210**, the power source can drive the ink delivery module **240** to move from inside the body **210** to be on the opened cover **220**. Moreover, in the present embodiment, the ink delivery module **240** is shifted from inside the body **210** to outside the body **210**. The ink delivery module **240** can be shifted smoothly due to the rotation of the first drive element **272** and the engagement to the second drive element **274**. In the present embodiment, ink leaking of the ink delivery module **240** during the moving process is prevented because the ink delivery module **240** does not rotate.

FIG. **9** is a partial side view of the ink delivery module of the media recording device depicted in FIG. **6** moving out of the body. With reference to FIG. **9**, when the ink delivery module **240** is shifted out of the body **210** in the manual or automatic method, the user can add ink through the ink injection hole **246**. Similar to the embodiment illustrated in FIG. **1**, since the eccentric wheel **254** presses against the delivery pipes **260** at the same time, adding ink does not affect the printing procedure of the print head **230** (not drawn).

FIG. **10**A is a partial perspective view of the media recording device depicted in FIG. **6** from another viewing angle. With reference to FIG. **10**A, the media recording device **200** further includes a first rail **280** and a second rail **290**. The first rail **280** is disposed on a bottom surface of the ink delivery module **240**, and the second rail **290** is correspondingly coupled to the first rail **280**. The second rail **290** includes a third section **290***a* and a fourth section **290***b*. The third section **290***a* is disposed in the body **210**, and the fourth section **290***b* is disposed on a surface **220***a* of the cover **220**. Moreover, the surface **220***a* faces the print head **230** when the cover **220** is closed relative to the body **210** (as shown in FIG. **6**). As shown in FIG. **10**A, when the cover **220** is in the closed state relative to the body **210**, the third section **290***a* and the fourth section **290***b* are separated from each other. Moreover, in the present embodiment, the multi-function peripheral **200** includes two first rails **280** and two corresponding second rails **290**, although a designer can adjust the quantity of the rails according to practical considerations.

FIG. **10**B is a partial perspective view of the cover depicted in FIG. **10**A being opened relative to the body. With reference to FIG. **10**B, when the cover **220** is in an open state relative to the body **210**, in the second rail **290**, the third section **290***a* located in the body **210** is connected to the fourth section **290***b* located on cover **220** to form an entire second rail **290**. The user can slide the ink delivery module **240** on the second rail **290** using the first rail **280** with the manual or automatic method, so as to slide the ink delivery module **240** out of the body **210**.

In the present embodiment, the first rail **280** is a recessed slide slot, and the second rail **290** is a protruded slide rail. However, in another embodiment which is not illustrated, the first rail is the protruded slide rail, and the second rail is the recessed slide slot. The recessed and protruded designs of the first rail **280** and the second rail **290** can provide preferable sliding restriction of the ink delivery module **240**, so as to prevent ink leakage from the ink cartridges when the ink delivery module **240** is sliding. In the present embodiment, the first rail **280** and the second rail **290** coordinate with the drive module **270**, so as to provide preferable stability when the ink delivery module **240** is moving.

FIG. **11** is a partial schematic view of a media recording device according to another embodiment of the invention. FIG. **12** and FIG. **13** are respective partial enlarged views of FIG. **11**. The ink delivery module is omitted for clearer identification of the described components. With reference to FIGS. **11-13**, a difference compared to the previous embodiments is that, a body **310** of a media recording device **300** has the walls **312**, **314**, and **316**. The wall **312** is similar to the wall **112** described in the earlier embodiments, and the walls **314** and **316** respectively extend away from the print head (shown in FIG. **1**) from two opposite edges of the wall **312**. Moreover, the ink supply system IS**3** further includes a plurality of first magnetic elements **381** and a plurality of second magnetic elements **382**. The first magnetic elements **381** are disposed on the inner surfaces of the walls **314** and **316**, and the second magnetic elements **382** are disposed on the cover **320**. In the present embodiment, the first magnetic elements **381** are formed by a holder **381***a* screw-locked to the wall **316** (same for the wall **314** on the other side) and a magnetic element **381***b* disposed in the holder **381***a*, although not limited thereto. The first magnetic elements **381** and the second magnetic elements **382** have a magnetic attraction property. Therefore, when the cover **320** is closed on the body **310**, the cover **320** is joined with the walls **314** and **316** by the first magnetic elements **381** and the second magnetic elements **382**.

In view of the foregoing, in the ink supply system and the media recording device according to the embodiments of the invention, by using the linkage to drive the eccentric wheel in the shut-off valve to press against the delivery tubes when the cover is opened, ink is prevented from flowing to the print head and affecting the printing procedure of the multi-function peripheral when the user adds ink to the ink delivery module. Moreover, the ink supply system may further include the drive module to provide preferable stability when the ink delivery module moves. The drive module includes two different designs, and therefore the media recording device has preferable design flexibility. Accordingly, the media recording device of the embodiments can provide ease of operation for the user.

Although the invention has been described with reference to the above embodiments, it will be apparent to one of the ordinary skill in the art that modifications to the described embodiment may be made without departing from the spirit

of the invention. Accordingly, the scope of the invention will be defined by the attached claims not by the above detailed descriptions.

What is claimed is:

1. An ink supply system adapted for a media recording device, the media recording device comprising a body and a print head disposed in the body, the ink supply system comprising:

a cover pivoted to the body, and the cover is adapted to open relative to the body so as to expose a plurality of elements disposed in the body;

an ink delivery module disposed in the body and next to the cover, and the ink delivery module has a plurality of color ink cartridges;

a plurality of delivery pipes connected between the print head and the ink delivery module;

a drive module, comprising:

a first drive element disposed on the ink delivery module;

a second drive element disposed on at least one of the body and the cover, and the second drive element is linked to the first drive element;

a pivot pivoted to the body; and

a plurality of pipes inserted on the pivot, the delivery pipes being joined to the corresponding pipes so the delivery pipes and the pipes rotate relative to a wall, wherein each of the delivery pipes comprises a first part and a second part, and the first part and the second part of a same delivery pipe are connected to two opposite ends of a same pipe.

2. The ink supply system of claim **1**, further comprising:

a shut-off valve module disposed between the print head and the ink delivery module, the shut-off valve module comprising:

a base disposed in the body;

an eccentric wheel pivoted to the base; and

a linkage connected between the eccentric wheel and the cover, the delivery pipes passing between the base and the eccentric wheel, the cover rotating relative to the body and driving the linkage to drive the eccentric wheel to rotate relative to the base, so the eccentric wheel presses against or releases the delivery pipes.

3. The ink supply system of claim **1**, wherein the first drive element and the second drive element are gear wheels, the first drive element is pivoted to the cover, the second drive element is disposed on the body, and the first drive element rotates along the second drive element so the cover rotates relative to the body.

4. The ink supply system of claim **3**, wherein the second drive element has a guide slot, the cover has a camshaft, and the camshaft is inserted in the guide slot and connected to an end of the linkage, so the cover and the linkage are guided and restricted by the guide slot.

5. The ink supply system of claim **3**, wherein each of the ink cartridges of the ink delivery module has a cartridge body and an ink injection hole located on a side wall of the cartridge body, the cartridge body is disposed on the cover to rotate relative to the body along with the cover, so the ink injection hole faces the print head or is exposed outside of the body.

6. The ink supply system of claim **1**, wherein the first drive element is a gear wheel pivoted to the ink delivery module, the second drive element is a gear rack, a first section of the gear rack is disposed on the body, a second section of the gear rack is disposed on the cover, and when the cover is closed relative to the body, the first section and the second section are separated from each other, and when the cover is opened relative to the body, the first section is connected to the second section, and the ink delivery module is slid out of the body by using the first drive element to rotate along the first section and the second section.

7. The ink supply system of claim **6**, further comprising:

a first rail disposed on a bottom surface of the ink delivery module; and

a second rail correspondingly coupled to the first rail, a third section of the second rail being disposed on the body, a fourth section of the second rail being disposed on the cover, and when the cover is closed relative to the body, the third section and the fourth section are separated from each other, and when the cover is opened relative to the body, the third section is connected to the fourth section, and the ink delivery module is slid out of the body by using the first rail to slide along the third section and the fourth section.

8. The ink supply system of claim **6**, wherein each of the ink cartridges of the ink delivery module has a cartridge body and an ink injection hole located on a top wall of the cartridge body, and the ink injection hole slides in or slides out of the body along with the cartridge body.

9. The ink supply system of claim **1**, further comprising a damping element disposed on a side of the ink delivery module not configured with the first drive element, and the damping element is leaned between the body and the cover.

10. A media recording device, comprising:

a body;

a cover pivoted to the body, and the cover is adapted to open relative to the body so as to expose a plurality of elements disposed in the body;

a print head disposed in the body;

an ink delivery module disposed in the body and next to the cover, and the ink delivery module has a plurality of color ink cartridges;

a shut-off valve module disposed between the print head and the ink delivery module, the shut-off valve module comprising:

a base disposed in the body;

an eccentric wheel pivoted to the base; and

a linkage connected between the eccentric wheel and the cover; and

a plurality of delivery pipes connected between the print head and the ink delivery module, the delivery pipes passing between the base and the eccentric wheel, wherein the cover is opened or closed relative to the body and drives the linkage to drive the eccentric wheel to rotate relative to the base, so the eccentric wheel presses against or releases the delivery pipes.

11. The media recording device of claim **10**, further comprising:

a drive module, comprising:

a first drive element disposed on the ink delivery module; and

a second drive element disposed on at least one of the body and the cover, and the second drive element is linked to the first drive element.

12. The media recording device of claim **11**, wherein the first drive element and the second drive element are gear wheels, the first drive element is pivoted to the cover, and the second drive element is disposed on the body, the first drive element rotating along the second drive element so the cover rotates relative to the body.

13. The media recording device of claim **12**, wherein the second drive element has a guide slot, the cover has a camshaft, and the camshaft is inserted in the guide slot and connected to an end of the linkage, so the cover and the linkage are guided and restricted by the guide slot.

14. The media recording device of claim 12, wherein each of the ink cartridges of the ink delivery module has a cartridge body and an ink injection hole located on a side wall of the cartridge body, the cartridge body is disposed on the cover to rotate relative to the body along with the cover, so the ink injection hole faces the print head or is exposed outside of the body.

15. The media recording device of claim 11, wherein the first drive element is a gear wheel pivoted to the ink delivery module, the second drive element is a gear rack, a first section of the gear rack is disposed on the body, a second section of the gear rack is disposed on the cover, and when the cover is closed relative to the body, the first section and the second section are separated from each other, and when the cover is opened relative to the body, the first section is connected to the second section, and the ink delivery module is slid out of the body by using the first drive element to rotate along the first section and the second section.

16. The media recording device of claim 15, further comprising:

a first rail disposed on a bottom surface of the ink delivery module; and

a second rail correspondingly coupled to the first rail, a third section of the second rail being disposed on the body, a fourth section of the second rail being disposed on the cover, and when the cover is closed relative to the body, the third section and the fourth section are separated from each other, and when the cover is opened relative to the body, the third section is connected to the fourth section, and the ink delivery module is slid out of the body by using the first rail to slide along the third section and the fourth section.

17. The media recording device of claim 16, wherein each of the ink cartridges of the ink delivery module has a cartridge body and an ink injection hole located on a top wall of the cartridge body, and the ink injection hole slides in or slides out of the body along with the cartridge body.

18. The media recording device of claim 10, further comprising:

a pivot pivoted to the body; and

a plurality of pipes inserted on the pivot, the delivery pipes being joined to the corresponding pipes so the delivery pipes and the pipes rotate relative to a wall, wherein each of the delivery pipes comprises a first part and a second part, and the first part and the second part of a same delivery pipe are connected to two opposite ends of a same pipe.

19. The media recording device of claim 10, further comprising a damping element disposed on a side of the ink delivery module not configured with the first drive element, and the damping element is leaned between the body and the cover.

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